Afghan Family Health Books Interim Baseline and Follow-up Data Analysis

Deliverables Report for Purchase Orders HHSP23200400712P & HHSP23200500350P

Background

The Afghan Family Health Book (AFHB) was designed to allow individuals without formal education to acquire Health Education information through interactive electronic picture book pages linked to local language recordings of related health messages. The book is intended to provide useful and practical information on disease prevention and health promotion, and to increase individual knowledge about healthy behaviors to ensure wellness and reduce the risk of disease.

During the period January-June 2005,The International Medical Corps (IMC) conducted a field evaluation of the AFHB in household settings in two provinces of Afghanistan. The General Objective of this project was to characterize the differences in health knowledge and practices between families who received the AFHB and families who did not receive the AFHB. Specific objectives are as follows:

- Determine health-related knowledge and practices in the two groups, intervention and control.
- Determine the extent to which changes in health knowledge and practices can be attributed to the use of the AFHB.
- Determine, through a supplementary user survey and anecdotal reports, who is using the book and under what conditions it is being used.
- Identify a large-scale distribution strategy for the remaining 17,000 books.

Toward these ends, IMC conducted a baseline KAP survey of 4,000 households in two provinces (Kabul and Laghman) in Afghanistan between January and February 2005. This report summarizes the results of that survey.

IMC submitted the KAP survey, included as Annex 1 in its project proposal to HHS and the Western Institutional Review Board in October 2004. It was approved, with one minor revision to the consent statement, on December 16, 2004. The revised survey was subsequently translated into Dari and Pashto in Kabul.

In December 2004, , IMC hired and trained 31 surveyors and 5 supervisors on the use of the AFHB, KAP survey techniques, and the use of Personal Data Assistants (PDAs). Two surveyors were recruited from each district to manage the data input from questionnaires into PDAs and transmission from the PDAs to the Global Relief Technologies (GRT) Virtual Network Operations Center (VNOC). [1]

[1] IMC detailed these training activities in the Afghan Family Health Book Deliverables Report: Recruitment and Training of Surveyors, Survey Supervisor and Community Health Workers in a report submitted to HHS on April 19, 2005.

IMC, in consultation with local leaders and other key stakeholders, had selected one Intervention and one Control District each in Kabul and Laghman Provinces. However, the distribution of 900 AFHB erroneously began before the baseline survey was conducted in one of these districts- Qarghayi District of Laghman Province. Alingar District was then selected to replace Qarghayi as the intervention district for Laghman Province. In January and February, surveyors conducted the baseline survey in the following four districts using paper questionnaires.

Methodology

Study design

IMC conducted a clustered, case-control design to ascertain the effectiveness of the AFHB versus Community Health Workers in changing health knowledge and practices. This was measured using a four-cell design, in which two areas were selected to serve as the intervention group, and the other two areas to serve as the control group. The intervention group was exposed to health messages through the CHWs, and received the AFHB, one per family. The control group was exposed to health education through the CHWs but without the AFHB.

The study involved two Dari-speaking districts in Kabul Province and two Pashto-speaking districts in Laghman Province. Although these sub-populations are not entirely representative of the country, the results will reflect a significant cross-section of the Afghan population. Kabul residents are generally less conservative than those in Laghman, and women in Laghman are generally less educated than those in Kabul. Samples of these sub-populations will likely represent a range of socio-economic status, ethnic backgrounds, and levels of formal education.

The study groups were located within catchment areas of IMC-supported health facilities, and where women community health workers (CHWs) are active. The two groups, intervention and control, were located in two discrete districts in each province, geographically separated to minimize "cross-fertilization." Efforts were made to match the two areas in terms of size, demographics, and access to health services. The control and intervention areas were selected in consultation and collaboration with local leaders, the Ministry of Health, and other key actors in the health sector.

	Intervention	**Control**
Kabul Province	District A	District B
Laghman Province	District C	District D

Study households were selected using random, proportional sampling. Within each cluster, study households were selected randomly to ensure that: a) the sample was representative of the populations of Kabul and Laghman provinces; and b) the sample was representative of the distribution of Dari and Pashto-speaking families. Each selected household will receive one AFHB in either Dari or Pashto, according to the language spoken in the home.

Sample Size

Sample size for this study was determined by an estimating a change/improvement in health care knowledge and by setting a desired margin of error. We assumed a change in knowledge of 0.50, a margin of error of +/- .05% at a 95% confidence level. The sample size required given these conditions was 1067 households. However, our sample design included two levels of clustering, and we therefore assumed a design effect of 2 and thus the calculated sample size was 2000. A total of 2,000 AFHB units were distributed for this evaluation project, and all 2,000 recipient households surveyed twice—once at

baseline, and again after six months. Two thousand control households were also identified. The total sample size was approximately 4,000 households.

Subjects

The IMC team interviewed person per selected household. This person was either a married woman of reproductive age or male head-of-household. Males were interviewed to see if there is a change in family knowledge passed down from the women who are given the AFHB. A female or male respondent was selected randomly from each household interview. In most instances, if only one adult, male or female, was present at the time a household was visited, that person was interviewed.

All study participants were selected using a combination of random and cluster sampling to obtain a representative, proportional sample in each of the 98 villages among four districts and two major Provinces. For each village, the village elder that knew the local population well helped researchers determine the extent of the village. Houses were chosen randomly in each village at an interval that completely sampled the village. A sampling interval (n) was calculated by dividing the number of households in the village by the number of interviews to be conducted within the cluster. A starting household was determined by random number generation and each n^{th} household was interviewed until each the entire village had been sampled.

We randomly sampled 98 clusters in each of 4 different districts of Laghman and Kabul Provinces. Overall, the sample was comprised of 7.04of the total population in the 4 Districts and 0.76% of the total population in the two sampled Provinces. Villages were excluded if they had fewer than 200 households, were industrial, market, or agricultural areas, or were deemed unsafe by local authorities or had lack of clearance of mines and unexploded ordinance at the time of the survey.

Instrument

The survey contained 116 questions on respondent demographics, knowledge assessment of health care topics including immunizations, micronutrients, hygiene and sanitation, diarrhea, malaria, tuberculosis, acute respiratory infections, sexually transmitted diseases, safety, first aid, mental health, female reproductive anatomy, prenatal care, birth and neonatal care, postpartum care, birth spacing, and breastfeeding and child nutrition. In addition, questions were asked regarding the use of the AFHB. Regarding health care knowledge, respondents were asked a series of yes or no questions under each topic of health care. Opinions were assessed by a response of "agree" or "disagree" to statements concerning the use of the AFHB.

The questionnaire was written in English and translated into *Dari and Pashto* and the accuracy of the translation was checked by back-translation into English. Three regional and medical experts reviewed the questionnaire for content validity. Interviewers administered the survey in *Dari* and/or *Pashto* depending on the language spoken in the home. The survey was pilot tested among 20 Afghans and the resulting suggestions regarding clarity and cultural appropriateness were incorporated.

Interviewers

The survey interviews were conducted by 31 surveyors, 6 females and 25 were males. They were trained and supervised by the IMC field supervisors and five trained Afghan research team leaders. Researcher training consisted of 2 days of classroom teaching and role-play followed by several days of field observation and continuous supervision.

All baseline interviews were conducted between January and March of 2005. Follow-up interviews were completed between April and June 2005. Interviews with participants lasted approximately 20-30 minutes and were conducted in the most private setting possible. All questionnaires were reviewed for completeness and for correctness of recording after the interview by the interviewers, then by the Afghan research team leaders, and finally, the IMC field supervisor at the end of each day.

Human Subjects Protections

This research proposal was reviewed and approved by Western Institutional Review Board and conducted in accordance with the Declaration of Helsinki, as revised in 2000.[2] All data was kept anonymous. Verbal informed consent was obtained from all participants. Participants did not receive any material compensation.

Statistical Analysis

To control for clustering and design effect, data were weighted by the number of districts sampled from each province, the number of villages sampled per district, and the number households in each village. Complex survey variance estimates were calculated using Taylor series linearization. All errors are nominal errors due to the inability to sample every sector randomly. For 2x2 cross tabulations containing cells with expected frequencies of fewer than 5, statistical significance were determined using Fisher's exact test; Yates' corrected chi square was used for all others. For cross tabulations with greater than 2 rows, statistical significance was determined using the Pearson chi square statistic. Analysis of variance (ANOVA) was used for statistical comparison of means. For all statistical determinations, significance levels were established at $p<0.05$.

Data Entry and Analysis

The data from the completed questionnaires were entered using GRT's electronic data collection system based on a handheld PDA (Personal Digital Assistant) interface and managed through their Virtual Networks Operation Center (VNOC). Efforts were made to select surveyors from among third year students of the Kabul Medical Institute, Nanagarhar Medical Institute, or students at the Institute of Health Sciences in Kabul and Jalalabad. Additional surveyors were recruited from doctor's wives and vaccinators and those who had conducted previous health surveys for IMC and/or for other nongovernmental organizations who provide health services in Afghanistan. Due to their training and education, these students were expected to have a good understanding of the health concepts in the AFHB and questionnaire, as well as experience using computerized systems.

Province	Intervention District	Control District
Kabul	Qarabagh	Shakerdera
Laghman	Alingar	Mehterlam

In mid-January, surveyors began transferring survey responses from the completed questionnaires to the PDAs, and from the PDAs to the VNOC via satellite phone. By March, they had completed this process for all 4,000 baseline survey questionnaires, but more than 1,300 records, primarily those transmitted from IMC's Jalalabad office, were found to be missing or incomplete when Global Relief Technologies shared with IMC the report of data received in April. The field and GRT collaborated to identify the missing data and IMC field staff re-sent the missing data in May and June. IMC completed the process of resending the missing baseline data and the Follow up Survey data by June 30, 2005. Other data entry and analysis issues were found at the time of the analysis of baseline data including the inability to use VNOC as a means for data analysis, missing variables, and incorrect database formatting. Differences between baseline and follow-up knowledge of health care topics were assessed by evaluating those who were able to answer all the questions correctly in a module. The proportional change from baseline was also assessed and the statistical differences analyzed between groups. Subgroup analysis such as gender and language differences will be forthcoming in the final report.

RESULTS

[2] United States Department of Health and Human Services. Title 45 CFR Part 46 Protection Of Human Subjects. Available at: http://ohsr.od.nih.gov/mpa/45cfr46.php3. Accessed April 4, 2003.

Characteristics of Respondents

A total of 4,288 households were sampled. Seventy-three did not make criteria for inclusion in the study and eleven households refused to participate. Of the 4,226 eligible households sampled, 3,947 households participating in the study (92% response rate), 450 or eleven percent of households were lost to follow-up, 257 did not have a baseline survey and thus could not be part of the complete study, 47 were assessed after only one month of exposure to the intervention and 71 household had multiple entries for the baseline survey or the follow-up survey leaving a total of 3,379 households. Demographics of the respondents are presented in Table 1. The sample consisted of 75% men (2549/3377) and 25% women (828/3377). The mean age was 30± 9 years (range, 15-65 years) for males and 29± 8 years (range, 15-49 years) for females. The majority of the participants sampled were married (2547/3370, 76%). Education was low for both men (5± 4.8 years (range, 0-19 years) and women (1± 2 years (range, 0-16 years). Eighty-three percent (675/811) of women had no years of education. Seventy-three percent (1835/2517) of men and only 19% (154/816) of women reported they worked outside the home. Close to half of households (1568/3372, 46%) reported they had food shortages over the last year; and 69% (1458/2126) of respondents reported that these shortages affected health care decisions.

Knowledge of Basic Health Care Topics

Table 2 presents the detailed initial analysis of differences in knowledge improvement among participants who were given an AFHB and those who did not receive the book but were followed by CHWs. On average, there was a 42% increase from baseline knowledge among those who used the AFHB and 12% among those who were followed by CHWs only.

Immunizations

Baseline knowledge of immunization topics was high for both case and control groups. The proportional change in this knowledge improved only with the AFHB. There was no significant change in knowledge of the population whose health education was limited to informational sessions with CHWs.

Micronutrients

Knowledge increased significantly in both the AFHB and CHW group, although the change in the AFHB was more than double the CHW instructional group.

Hygiene and Sanitation

Initially, the AFHB respondents had less knowledge regarding hygiene and sanitation than the CHW respondents; however, the proportional change in knowledge in hygiene was more than double in the AFHB group.

Diarrhea

Both the AFHB and the CHW groups had little baseline knowledge about diarrhea. The proportional change in knowledge increased significantly with the AFHB compared with the CHWs.

Malaria

Malaria was one of three topics where less than a third of participants were able to answer all the questions correctly. Although knowledge increased significantly in both groups, the increase in knowledge among those with the AFHB was more than double the baseline.

Tuberculosis

Less than half of participants had significant knowledge about Tuberculosis despite the high rates of this disease in the country. The AFHB more than doubled baseline knowledge compared with CHW health messages.

Acute Respiratory Infections
There was no change from baseline knowledge among participants followed by CHWs and a significant change among those with the AFHB.

Knowledge Regarding Sexually Transmitted Diseases
Low baseline knowledge of STDs was similar among other related health care topics such as postpartum care, female reproductive anatomy and birth spacing. Although knowledge increased in the AFHB group, the proportion of change was not as high as in other modules.

Safety
The AFHB increased safety knowledge. No change was noted among participants followed by CHWs.

First Aid
Knowledge regarding first aid nearly doubled in the AFHB group but also improved in the CHW group. However the proportion of change in the CHW group was less than half the change seen in the AFHB group.

Mental Health
There was a significant difference in baseline knowledge between the case and control group. The control groups had much higher baseline knowledge. This not withstanding, the proportional change in knowledge during the period of the study was much greater among participants using the AFHB.

Female Reproductive Anatomy
One of the lowest baseline knowledge modules, female reproductive health knowledge improved significantly in both groups, however, the increase in this knowledge do not reach more than 80% as seen in other modules.

Prenatal Care, Birth and Neonatal Care, Postpartum Care, Birth Spacing
Less than 50% of participants were able to answer all questions regarding prenatal care correctly. Although both groups had an increase in knowledge, the AFHB group doubled its knowledge in these modules.

Breastfeeding/Child Nutrition
Among the women's health modules, breastfeeding and child nutrition was a topic where baseline knowledge was better than other women's health modules. However, despite higher baseline knowledge, improvement in this knowledge was minimal for both groups, yet still statistically significant.

Opinions and Beliefs Regarding Use of the Afghan Family Health Book

Overall, survey respondents found the book to be too complicated, did not understand the words used and did not enjoy using the tool. Women were more cynical regarding the book than men. Of the participants surveyed, they do not believe that behavioral health changes improve health. The Afghan Family Health Book was used by less than 10% of household members over the 3 month study. Neither men (7%) nor women (3%) would plan or had changed health practices based on what they learned in the Afghan Family Health Book. Both men and women prefer/believe that health is better taught by Community Health Workers than the Afghan Family Health Book.

However, anecdotal information reported by the surveyors and by the co-investigator who made household visits to those using AFHB tell a different story. They indicated that the users perceived the books as useful and valuable, that the books were used as reference tools when families had questions about health issues and that male and female household members of all ages used the books several hours per week. On two occasions in the province of Laghman, village elders sought out the survey supervisor and the program manger/co-investigator to tell them how useful these books were in their own household and how important they were for the education of the people in their locale. They also stressed the fact that the books were more useful to the family than educational sessions by the CHWs because they were always available in the household and could be accessed any time. Families from households who did not receive AFHB also sought out surveyors and supervisors in the project to request that their families have the opportunity to learn from the AFHB.

From a cultural perspective, it is not surprising that survey respondents who had access to instruction by CHWs preferred CHW-facilitated sessions to time spent learning independently from the AFHB. Afghans place a high value on personal contact and interaction. Moreover, Afghans in rural areas who have little or no schooling (as Table #1 indicates is the case with many of the survey respondents in this study) and no access to television learn new behaviors primarily from observing and interacting with others. They have little or no experience with learning from books or electronic forms of media. For most Afghans, schools are the places in which they are introduced to learning from books.

Survey respondents reference for interaction with the CHWs, even though knowledge improves from using the AFHB indicates that incorporating the AFHB with CHW facilitated health education sessions would be more attractive to Afghan users from a cultural perspective and could increase health education knowledge more rapidly than using the AFHB independently.

Limitations

Based on this interim analysis, the results cannot be generalized to all of Afghanistan. Because of the disproportionate distribution of books among women and men, it will be difficult to assess differences by gender. The high loss to follow-up and the loss of data due to data entry error or methodology errors will have little effect on the outcome of analysis, however, the power (calculated at 95%) may be somewhat less especially among the subgroup analyses (forthcoming).

Conclusion

Based on an interim analysis of the data and without any subgroup analysis, knowledge improves more among those who used the AFHB. However, because the vast majority of participants preferred the contact with CHWs, combining the two modalities may be the most effective and cost-effective modality for increasing health care knowledge in the community.

Tables

Table 1: Demographic Characteristics of Respondents (N=)

Characteristic	Respondents*
Participants, n=3377	

Male Female	2549(75) 828 (25)
Age of respondent (years), mean ± SE (range) Male Female	 30 ± 9 (15-65) 29 ± 8 (15-49)
Marital status, N = 3370 Married Never married Widowed	 2547 (76) 811 (24) 12 (1)
Highest year of education Male Female	 5 ± 5 (0-19) 1 ± 2 (0-16)
Works outside the home Male, N=2517 Female, n=816	 1835 (73) 154 (19)
Food Shortages in the Last12 months, N=3372 Yes No	 1568 (46) 1804 (54)
Food Shortages Affected Decisions About Health Care, N=2126 Yes No	 1458 (69) 668 (31)

* Values are number (percent) unless stated otherwise., includes cases and controls.

Table 2: Changes In Health Care Knowledge Using the Afghan Family Health Book (AFHB) In Comparison to Community Health Workers (CHW).

Modules	**Baseline Knowledge***	**Follow-up Knowledge**	**Percent Change†**	***P*-Value**
Immunizations AFHB CHW	 1319 (74), N=1744 1403 (83), N=1619	 1700 (97), N=1747 1426 (84), N=1620	 .25 .01	 <.0001 0.28
Micronutrients AFHB CHW	 967 (60), N=1518 1185 (71), N=1545	 1675 (98), N=1705 1282 (90), N=1427	 .38 .19	 <.0001 <.0001
Hygiene and Sanitation AFHB CHW	 1029 (59), N=1567 1316 (82), N=1539	 1696 (98), N=1728 1272 (89), N=1390	 .39 .07	<.0001 .0001
Diarrhea AFHB CHW	 1058 (68), N=1514 1139 (69), N=1520	 1696 (98), N=1725 1161 (73), N=1424	 .30 .04	 <.0001 .001
Malaria AFHB CHW	 565 (32), N=1576 618 (29), N=1494	 1668 (96), N=1717 929 (56), N=1351	 .64 .27	 <.0001 <.0001
Tuberculosis AFHB CHW	 711 (42), N=1481 879 (46), N=1495	 1672 (97), N=1717 960 (56), N=1380	 .54 .10	 <.0001 .0009
Acute Respiratory Infections AFHB CHW	 830 (51), N=1460 1062 (64), N=1517	 1664 (96), N=1717 1013 (64), N=1369	 .45 0	 <.0001 0.20
Sexually Transmitted Diseases				

Diseases AFHB CHW	347 (22), N=1635 475 (27), N=1479	933 (40), N=1717 607 (36), N=1417	.18 .09	<.0001 <.0001
Safety AFHB CHW	1168 (69), N=1596 1361 (88), N=1561	1689 (97), N=1724 1277 (82), N=1483	.27 -.06	<.0001 .0005
First Aid AFHB CHW	867 (53), N=1521 1025 (62), N=1496	1661 (98), N=1704 1216 (83), N=1409	.45 .21	<.0001 <.0001
Mental Health AFHB CHW	790 (46), N=1558 1092 (73), N=1619	1646 (97), N=1700 1223 (83), N=1423	.51 .10	<.0001 <.0001
Female Reproductive Anatomy AFHB CHW	386 (27), N=1526 540 (30), N=1494	1461 (80), N=1686 1010 (67), N=1339	.57 .37	<.0001 <.0001
Prenatal Care AFHB CHW	685 (45), N=1494 787 (48), N=1417	1645 (96), N=1704 924 (60), N=1277	.51 .12	<.0001 <.0001
Birth and Neonatal Care AFHB CHW	734 (47), N=1487 824 (49), N=1447	1645 (96), N=1704 924 (60), N=1277	.49 .11	<.0001 0.003
Postpartum Care AFHB CHW	541 (37), N=1540 603 (30), N=1512	1657 (96), N=1714 878 (57), N=1349	.59 .27	<.0001 <.0001
Birth Spacing AFHB CHW	585 (39), N=1514 845 (47), N=1503	1659 (96), N=1717 844 (42), N=1461	.57 -.05	<.0001 .0004
Breastfeeding and Child Nutrition AFHB CHW	762 (47), N=1608 941 (57), N=1619	1096 (50), N=1713 929 (62), N=1541	.03 .05	<.0001 <.0001

* Values are number (percent) unless stated otherwise

† Percent change refers to the change in the number of individuals able to answer all questions within a module correctly before and after the Afghan Family Health Book or visits with a Community Health Worker.

Table 3: Opinions and Beliefs Regarding Use of the Afghan Family Health Book (AFHB)

Characteristic*, N=2,194	Male	Female	*P*-value
Gender	1,578 (72)	615 (28)	-
Age (mean ± SD, range)	31 ± 8.6, 15-49	29 ± 7.6, 15-49	.003
Years of education (mean ± SD, range)	4 ± 5.3, 0-16	0.3 ± 1.5, 0-12	<.001
Working outside the home	1344 (85)	186 (30)	
Reported food shortages in the last 12 months	887 (56)	269 (44)	<.001
Use of the Afghan Family Health Book			
Enjoyed using AFHB	125 (8)	24 (4)	.001

AFHB was too complicated to use	1463 (93)	588 (96)	.01
Believed words the AFHB used were too difficult to understand	1467 (93)	588 (96)	.03
Health Education			
Believe Community health workers (CHWs) teach health the best	0149 (67)	556 (91)	<.001
Believe the AFHB helped family to better understand health	265 (17)	40 (7)	<.001
Learned more about health issues from CHWs than the AFHB	1088 (69)	416 (68)	.51
Learned more about health issues from the AFHB than CHWs	114 (7)	28 (4)	.02
Agreed that everyone in the family used the AFHB and learned health issues	150 (9)	57 (9)	.85
	110 (7)	22 (4)	.003
Men learned the most from the book	106 (7)	10 (2)	<.001
Women learned the most from the book	111 (7)	28 (5)	.03
Children learned the most from the book			
Health Practices			
Believe that changing practices can lead to better health	101 (6)	18 (3)	.001
Plan to change practices because of what was learned from the AFHB	107 (7)	20 (3)	.001
Have change practices because of what was learned from the AFHB	110 (7)	19 (3)	.001
Health Behavioral Changes			
Because of the AFHB, now wash with soap and water after latrine use	109 (7)	20 (3)	.001
Because of AFHB, now take children to be immunized	108 (7)	20 (3)	.001
Because of AFHB, now eat more fruits and vegetables	109 (7)	19 (3)	.001
Because of AFHB, now sleep under a bed net	107 (7)	19 (3)	.001
Because of AFHB, now the children sleep under a bed net	108 (7)	19 (3)	.001
Because of AFHB, women have gone to the clinic for antenatal care	107 (7)	19 (3)	.001
Because of AFHB, women received tetanus vaccination	101 (6)	17 (3)	.001
Because of AFHB, women gave birth in clinic	107 (7)	17 (3)	.001
Because of AFHB, women talked with health care provider about timing and spacing	107 (7)	18 (3)	.001
Health Care Information Dissemination			
Talked to friends or neighbors about what was learned in the AFHB	107 (7)	18 (3)	.001
Encouraged friends or neighbors to change health care practices for better health	107 (7)	18 (3)	.001

Number (Percent) unless otherwise stated